II. AMENDMENT OF THE CLAIMS

COMPLETE LIST OF CLAIMS THAT ARE OR HAVE BEEN BEFORE THE OFFICE AFTER ENTRANCE OF THE AMENDMENTS MADE HEREIN

In accord with such regulation, the listing of claims set forth below replaces all prior versions, and listings, of claims in the application:

--CLAIMS AS PENDING IN THE APPLICATION WITH AMENDMENTS MADE HEREIN START ON NEXT PAGE--

1. (CURRENTLY AMENDED) A method of operating a code division multiple access (CDMA) cellular communications system on ~~substantially~~ a same frequency band~~(s)~~ comprising at least one macro cell including a macro cell base station and at least one micro cell including a micro cell base station, the at least one micro cell being located at least in part within an area served by the at least one macro cell base station, which method comprises the steps of:

(1) providing at said micro cell base station non-real time data services when permitted by a dynamic interference level from the perspective of said micro cell, which dynamic interference is caused by said macro cell base station;

(2) receiving an electronic indication representative of the quality of service at one or more cellular communications device served by the macro cell base station;

(3) electronically processing the or each electronic indication to obtain a comparison with a predetermined threshold for said quality of service; and

(4) maintaining said quality of service above said predetermined threshold for any cellular communications device(s) served by the at least one macro cell base station that is within a predetermined range of the micro cell base station by limiting the power of signals transmitted in step (1) from the at least one micro cell base station.

2. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, wherein those cellular communications device(s) within said predetermined range can be determined by electronically processing signals representative of macro cell interference and micro cell interference at each cellular communications device, the predetermined range being that distance at which micro cell interference is negligible in comparison with macro cell interference.

3. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, wherein said predetermined range is that distance from the micro cell base station at which micro cell interference is at least approximately 10 dB less than macro cell interference.

4. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the steps of generating an electronic signal representative of said predetermined range, receiving respective electronic signals representative of the distance between said micro cell base station and the or each cellular communications device served by the macro cell, and processing said electronic signals so as to determine those cellular communications devices served by the macro cell that are within said predetermined range.

5. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 4, wherein said electronic signals representative of the distance between said micro cell base station and the or each cellular communications device are obtained by the steps of determining respective estimated geographic position of the or each cellular communications device and processing said estimated geographic position to determine a distance between said micro cell base station and the or each cellular communication device.

6. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 5, further comprising the step of obtaining said respective estimated geographic position of the or each cellular communications device with a radiolocation method.

7. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, wherein the step 4 is carried out by electronically determining a tolerable micro cell base station power level for the or each cellular communications device served by the macro cell base station and instructing said micro cell base station to transmit all signals at a power substantially no higher than said tolerable level.

8. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular

communications system as claimed in claim 7, further comprising the steps of electronically determining a tolerable micro cell base station power level for all cellular communications devices served by the macro cell base station within said predetermined range, and electronically instructing said micro cell base station to transmit signals at a power substantially no higher than the lowest tolerable micro cell base station power that has been determined for said cellular communications devices.

9. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 7 wherein said tolerable micro cell base station power level is a fraction of the power of signals from the macro cell base station.

10. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 9, wherein for each cellular communications device said tolerable micro cell base station power level is obtainable from: -

$$P_{MIC}^{MAX} = P_{MAC} \cdot \frac{L_{MAC}}{L_{MIC}} \left[\frac{1}{SINR_{MIN}} - \frac{1}{SINR_0} \right]$$

where P_{MIC}^{MAX} is the maximum tolerable micro cell base station power, P_{MAC} is the transmitted power from the macro cell base station, L_{MAC} and L_{MIC} are the path loss from the macro cell and micro cell base stations respectively, $SINR_{MIN}$ corresponds to the minimum tolerable signal to interference plus noise ratio for each cellular communications device, and $SINR_0$ is the signal to interference plus noise ratio of the cellular communications device assuming there is no micro cell base station interference.

11. `**(PREVIOUSLY PRESENTED)** A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the step of electronically determining a residence time in said predetermined range for the or each cellular communications device served by the macro cell base station, said residence time being useable to substantially maintain the quality of service of said cellular communications device(s).

12. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the step of substantially ceasing transmission of signals from said micro cell base station to cellular communications device(s) served thereby in order to substantially maintain the quality of service of cellular communications devices served by the macro cell

base station that are within said predetermined range.

13. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the step of electronically instructing said micro cell base station to take over service of the or each cellular communications device within said predetermined range, enabling resumption or continuation of transmission and reception of signals to and from cellular communications devices served by the micro cell base station and/or macro cell base station.

14. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the step of prioritizing service from said micro cell base station to cellular communications devices requiring substantially real-time data above those requiring substantially non-real-time data.

15. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the step of serving cellular communications device(s) from said macro cell base station with at least one adaptive antenna capable of directional transmission and/or reception, thereby enabling reduction in the necessary transmission power of said micro cell base station and cellular communications devices served thereby to achieve a given

signal quality.

16. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications as claimed in claim 1, further comprising the step of electronically adjusting the data transmission rate to cellular communications devices served by the micro cell base station

17. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 1, further comprising the steps of electronically processing said electronic indication and a selected data transmission rate for each cellular communications device to determine a proportion of the maximum tolerable micro cell base station power for that cellular communications device, until either all of said available micro cell base station power has been assigned or the total number of cellular communications devices been processed, prioritizing assignment of transmission power to cellular communications device(s) requiring substantially real-time data above those requiring substantially non-real time data, and transmitting data to each cellular communications device at the respective assigned transmission power.

18. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 17, wherein said proportion for the *i*th cellular communications device is obtainable from:

$$\phi_i = \frac{(SINR)_i R_i (I_{inter} + I_{intra} + I_{interL} + N_0)}{\beta PC}$$

assuming the Gaussian approximation for multiple access interference, and where $SINR_i$ is the signal to interference plus noise ratio, R is the transmission rate from the micro cell base station, I_{inter}, I_{intra} and I_{interL} are inter-cell, intra-cell and inter-layer interference components respectively, N_0 is noise, β is the user's path loss factor in real terms (not in dB), P is the total output power from the micro cell base station, C is the constant chip rate and where $0 \leq \phi_i \leq 1$.

19. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular communications system as claimed in claim 18, further comprising the step of electronically adjusting said selected data transmission rate if said electronic processing determines said proportion to be such that, on its own or when summed with proportion(s) calculated for any other cellular communications device(s), it exceeds said maximum tolerable micro base station transmission power, and re-performing said electronic calculation with said adjusted selected data rate.

20. (PREVIOUSLY PRESENTED) A method of operating a CDMA cellular

communications system as claimed in claim 1, further comprising the steps of electronically instructing buffering of data for cellular communications devices served by the micro cell base station, and adjusting the number of those cellular communications devices to which data is transmitted to increase the ability of the system to serve the remaining cellular communications devices being served by the micro cell base station.

21. (CURRENTLY AMENDED) A computer operable controller for use with a CDMA cellular communications system comprising:

at least one macro cell including a macro cell base station and at least one micro cell including a micro cell base station, at least part of the micro cell being located within an area served by the macro cell base station, said CDMA cellular communications system configured to be operated on ~~substantially the~~ a same frequency band ~~(s)~~,

the computer operable controller comprising: a memory storing an algorithm providing at said micro cell base station non-real time data services when permitted by a dynamic interference level from the perspective of said micro cell, which dynamic interference level is caused by said macro cell base station;

a receiver receiving an electronic indication representative of the quality of service at one or more cellular communications devices served by the macro cell base station; and

a processor electronically processing the or each electronic indication to obtain a comparison with a predetermined threshold for said quality of service; whereby said computer is programmed to maintain said quality of service above said predetermined threshold for any cellular communication device(s) served by the macro cell base station that is within a predetermined range of the micro cell base station by limiting the power of signals comprising said non-real time data services transmitted from the micro cell base station.

22. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, said algorithm determining those cellular communications device(s) within said predetermined range by electronically processing signals representative of macro cell interference and micro cell interference at said cellular communications device(s), the predetermined range being that distance at which micro cell interference is negligible in comparison with macro cell interference.

23. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 22, wherein said predetermined range is that distance from the micro cell base station at which micro cell interference is at least approximately 10dB less than macro cell interference.

24. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, wherein said algorithm generates respective electronic signals

representative of the distance between said micro cell base station and the or each cellular communications device served by the macro cell, and said processor processes said electronic signals so as to determine those cellular communications devices served by the macro cell that are within said predetermined range.

25. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 24, wherein said processor can receive an electronic signal representative of a respective estimated geographic position of the or each cellular communications device and can process said signal to determine a distance between said micro cell base station and the or each cellular communication device.

26. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 25, wherein said algorithm obtains said respective estimated geographic position of the or each cellular communications device by a radiolocation method.

27. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, wherein said processor determines a tolerable micro cell base station power level for the or each cellular communications device served by the macro cell base station and said processor instructs said micro cell base station to transmit all signals at a power substantially no higher than said tolerable level.

28. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in

claim 27, further comprising said processor for determining a tolerable micro cell base station power level for all cellular communications devices served by the macro cell base station within said predetermined range, whereby said computer operable controller instructs said micro cell base station to transmit signals at a power substantially no higher than the lowest tolerable micro cell base station power that has been determined for said cellular communications devices.

29. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 27 wherein said processor can, in use, determine said tolerable micro cell base station power as a fraction of the power of signals from the macro cell base station.

30. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 29, wherein for each cellular communications device said tolerable micro cell base station power is obtainable from:

$$P_{MIC}^{MAX} = P_{MAC} \cdot \frac{L_{MAC}}{L_{MIC}} \left[\frac{1}{SINR_{MIN}} - \frac{1}{SINR_0} \right]$$

where P_{MIC}^{MAX} is the maximum tolerable micro cell base station power, P_{MAC} is the transmitted power from the macro cell base station, L_{MAC} and L_{MIC} are the path loss from the macro cell and micro cell base stations respectively, $SINR_{MIN}$ corresponds to the minimum tolerable signal to interference plus noise ratio for each cellular communications device, and $SINR_0$ is the signal to interference plus noise ratio of the cellular communications device assuming there is no micro cell base station interference.

31. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, further comprising said processor for determining a residence time in said predetermined range for the or each cellular communications device served by the macro cell base station, said residence time being useable to substantially maintain the quality of service of said cellular communications device(s).

32. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, further comprising said processor for ceasing transmission of signals from said micro cell base station to cellular communications device(s) served thereby to substantially maintain the quality of service of cellular communications devices served by the macro cell base station and/or micro cell base station.

33. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 32, further comprising said processor for instructing said micro cell base station to take over service of the or each cellular communications device within said predetermined range, enabling resumption or continuation of transmission and reception of signals to and from cellular communications devices served by the micro cell base station.

34. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, further comprising said processor for prioritizing service from said micro

cell base station to cellular communications devices requiring substantially real-time data above those requiring substantially non-real-time data.

35. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claims 31, further comprising a controller for controlling at least one adaptive antenna capable of directional transmission and/or reception, thereby enabling reduction in the necessary transmission power of said micro cell base station and cellular communications devices served thereby to achieve a given signal quality.

36. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 21, said processor adjusting the data transmission rate to cellular communications devices served by the micro cell base station.

37. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 36, wherein said processor

(a) electronically processes electronic indication and a selected data transmission rate for each cellular communications device to determine a proportion of a maximum tolerable micro cell base station power for that cellular communications device, until either all of said available micro cell base station power has been assigned or a total number of cellular communications devices been processed,

(b) prioritizes assignment of transmission power to cellular communications device(s) requiring substantially real-time data above those requiring substantially non-real-time data, and

(c) instructs transmission of data to each cellular communications device at the respective assigned transmission power.

38. (PREVIOUSLY PRESENTED) The computer operable controller as claimed in claim 37, wherein said proportion for the *i*th cellular communications device is obtainable from:

$$\phi_i = \frac{(SINR)_i R_i (I_{inter} + I_{intra} + I_{interL} + N_0)}{\beta PC}$$

assuming the Gaussian approximation for multiple access interference, and where $SINR_i$ is the signal to interference plus noise ratio, R is the transmission rate from the micro cell base station, I_{inter}, I_{intra} and I_{interL} are inter-cell, intra-cell and inter-layer interference components respectively, N_0 is noise, β is the user's path loss factor in real terms (not in dB), P is the total output power from the micro cell base station, C is the constant chip rate and where $0 \leq \phi_i \leq 1$.

39. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 37, wherein said processor electronically adjusts said selected data

transmission rate if said processor determines said proportion to be such that, on its own or when summed with proportion(s) calculated for any other cellular roads device(s), it exceeds said maximum tolerable micro base station transmission power, and means for re-performing said electronic calculation with said adjusted data rate.

40. (PREVIOUSLY PRESENTED) A computer operable controller as claimed in claim 37, further comprising a buffer operatively configured to buffer data for cellular communications devices served by the micro cell base station, wherein said processor programmed to adjust the number of those cellular communications devices to which data is transmitted so as to increase the ability of the system to serve the remaining cellular communications devices being served by the micro cell base station.

41. (PREVIOUSLY PRESENTED) A base station controller comprising a computer operable controller as claimed in claim 21.

42. (PREVIOUSLY PRESENTED) A computer readable medium storing computer executable instructions for carrying out a method according to claim 1.

43. (PREVIOUSLY PRESENTED) A computer program comprising program instructions for causing a computer, such as a base station controller, to carry out

the method of claim 1.

44. (PREVIOUSLY PRESENTED) A computer program comprising program instructions for causing a computer, such as a macro cell base station controller, to perform the method steps of claim 1.

45. (PREVIOUSLY PRESENTED) A computer program comprising program instructions for causing a computer, such as a micro cell base station controller, to perform the method steps of claim 11.

46. (CURRENTLY AMENDED) A CDMA communications system comprising a computer operable controller, at least one macro cell base station, and at least one micro cell base station having at least a part of the micro cell base station within the area served by said macro cell base station; said CDMA communications system being operatively configured on ~~substantially~~ a same frequency band~~(s)~~,

(1) to provide at said micro cell base station non-real time data services when permitted by a dynamic interference level from the perspective of said micro cell, which dynamic interference is caused by said macro cell base station;

(2) to receive an electronic indication representative of the quality of service at one or more cellular communications device served by the macro cell base station;

(3) to process electronically the or each electronic indication to obtain a comparison with a predetermined threshold for said quality of service; and

(4) to maintain said quality of service above said predetermined threshold for any cellular communications device(s) served by the at least one macro cell base station that is within a predetermined range of the micro cell base station by limiting the power of signals transmitted in step (1) from the at least one micro cell base station.

47. – 48. (CANCELLED)